REMARKS

The Final Office Action (hereinafter the Action), dated January 13, 2005, has been reviewed and these remarks are responsive thereto. Claims 1-13 and 15-22 are pending with this response. Claims 16-18 have been objected to. Claims 13, 15, 19, 20, and 22 have been allowed. Claims 1-12 and 21 stand rejected. Upon entry of this amendment, claims 10, 16-18, and 21 shall be amended.

Typographical Errors

Claims 7, 10, 13, and 19 have been amended to correct minor typographical errors. In claim 7, the words "beat oscillator" were replaced with "beat detector" to maintain consistency within the claim and also with the specification. The words "of a" in claim 10 were inadvertently left out of a previous amendment, but appeared in the claim as originally filed. In claim 13, the word "a" was replaced with "an" and elsewhere the word "a" was replaced with "said" in order to recognize proper antecedent basis for "chaotic oscillator." Finally, in claim 19, the word "an" was similarly replaced with "said" for the word "inductor." Additionally, the word "a" was added to provide a proper article for "chaotic signal." Finally, the words "chaotic signals" were replaced with "oscillating regimes" to maintain consistency within the claim.

Claim Objections

Claims 16-18 were objected to in the Action because they depended from canceled claim 14. Applicants have amended the claims to correct this. Applicants respectfully submit that claims 16-18 are now in proper condition for allowance and request notification to that effect.

Allowable Claims

Applicants thank the Examiner for allowing claims 13, 15, 19, 20, and 22.

Rejections under 35 U.S.C. §103

Claims 1-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,857,165 to Corron, *et al.* (hereinafter *Corron*) in view of Chua, et al. "Transmission of digital signals by chaotic synchronization," Dept. of Elec. and Computer Sciences, University of

California, 1993, pp. 395-403 (hereinafter *Chua et al*). In rejecting independent claim 1, the Action admits that *Corron* "does not explicitly teach a component element being isolated from said chaotic circuit by a switch such that when said switch is switched to a first state, said value has a first magnitude and when said switch is switched to a second state, said value has a second magnitude." The Action then alleges that *Chua et al* repairs this defect and teaches the component element being isolated from the chaotic circuit by a switch, pointing to page 402 of the reference for support.

The combination of *Corron* and *Chua et al* does not teach or suggest every element of independent claim 1. Although *Chua et al* generally discusses the transmission of signals using chaotic circuits, it in no way discloses the use of a switch to isolate a component element from the chaotic circuit. In fact, *Chua et al* teaches away from the use of such an element, instead disclosing the use of a voltage-controlled capacitance to transmit information (p. 402, 1st para. and p. 400, Fig. 2). *Chua et al* further does not disclose additional elements of claim 1, including "said switch being controllable responsibly to an information signal without transforming said information signal." The voltage-controlled capacitance disclosed in *Chua et al* indeed transforms the information signal, whether the signal is digital or analog.

Furthermore, the combination of *Corron* with *Chua et al* is not obvious and the Action provides no motivation for such a combination. While *Corron* discloses a method for communicating with chaotic and other waveforms by employing a filter for estimating a parameter that describes a property of a signal (Abstract), *Chua et al* discloses a method of transmitting digital signals by means of alternating chaotic synchronization and desynchronization (p. 395). The techniques disclosed are dissimilar, and neither reference provides motivation to combine the two.

For at least the foregoing reasons, independent claim 1 is not taught or suggested by the inappropriate combination of *Corron* and *Chua et al*. Applicants respectfully traverse the rejection and submit that the claim is allowable. With regard to claims 2-6 which depend from claim 1, they are also allowable for at least the same reasons. Dependent claim 4 is additionally allowable for disclosing a switch comprising an optoisolator. The Action admits that an optoisolator is not disclosed by either *Corron* or *Chua et al*, and takes official notice that using

one would have been obvious. Applicants traverse this unsupported statement and respectfully request that the Examiner produce a reference disclosing the claim element or elements.

The combination of *Corron* and *Chua et al* does not teach or suggest every element of independent claim 7. Claim 7 discloses, among other elements,

> a beat detector connected to said oscillating subportion to detect a difference between a fundamental frequency of said oscillating subportion and a current one of said at least three different chaotic signals, whereby said information signal is detected by said beat detector.

Although the Action alleges that *Corron* in combination with *Chua et al* discloses claim 7, the Action provides no citation as to where either reference teaches or suggests the above portion of the claim. In fact, neither *Corron* nor *Chua et al* teach or suggest the use of a beat detector to detect a difference between a fundamental frequency of an oscillating portion and one of at least three different chaotic signals. At a minimum, the lack of a beat detector in the inappropriate combination of *Corron* and *Chua et al* means that claim 7 is allowable over the combined references. Moreover, claims 8-12, which depend directly or indirectly from claim 7, are also allowable for at least the same reasons as claim 7. Applicants traverse the rejections of claims 7-12 and respectfully request their allowance.

Claim 21 was rejected under 35 U.S.C. § 103(a) as being unpatentable over *Corron*. The Action alleges that *Corron* discloses:

> a communications system comprising: transmitting and receiving Chua circuits at least one component of said transmitting Chua circuit including at least two subcomponents, at least one of which being selectively isolated from said transmitting Chua circuit by a switch (isolates from the Chua circuit via an op amp FET switch, fig 2) such that a current oscillating regime of said transmitting Chua circuit is selectively alternated between at least two respective oscillating regimes (if the signal is discrete, states of the oscillators will have two states, see fig 4, plot 208)

Applicants traverse this rejection and submit that *Corron* does not teach or suggest the elements of claim 21 alleged above. *Corron* refers to Figure 2 (Col. 7, lines 24-27) merely teaching:

> The system in equation (23) reverts to a standard *unmodulated* Chua system for $\gamma=0$ and $\lambda=0$. In the circuit of FIG. 2, this is easily obtained by removing R_4 and effectively realizing an infinite resistance for R_4.

(Emphasis added.) Here, *Corron* teaches that R_4 may be removed (by a switch, as the Action presumes) in order to merely block an information signal (V_R and V_L as show in fig. 2) from reaching the Chua circuit and not selecting one of at least two oscillating regimes. Moreover, *Corron* does not teach or suggest that "at least one component of said transmitting Chua circuit including at least two subcomponents, at least one of which being selectively isolated from said transmitting Chua circuit by a switch." The only components which could possibly be considered "isolated" from said transmitting Chua circuit by a switch in Figure 2 of *Corron* are resistors R_1 and R_2, as they sit beyond the "op amp FET" which the Action alleges is the switch of claim 21. However, R_1 and R_2 are in no way components or subcomponents of said transmitting Chua circuit. Therefore, *Corron* does not teach or suggest the identified features of claim 21.

In further rejecting claim 21, the Action admits that *Corron* "does not explicitly teach a detector connected to detect when said receiving Chua circuit is in synchrony with a chaotic signal generated by said transmitting Chua circuit." The Action proceeds to cite portions of *Corron*, alleging that the reference "discloses an alternative method of detecting when said receiving Chua circuit is in synchrony with a chaotic signal generated by said transmitting Chua circuit through a modulation parameter that does not appear in the synchronous subsystem (col. 2, lines 20-36 and col. 9, lines 53-61)," and further discusses "a detector for detecting when said receiving circuit is in synchrony with a chaotic signal (col. 1, lines 40-50) for digital signals." Applicants further traverse this rejection for at least the reasons set forth below.

Corron does not render obvious the embodiment disclosed in claim 21, and furthermore teaches away from the aspects of the invention embodied in claim 21. Applicants have amended claim 21 to clarify the teachings of the claim and add the feature of detecting "when said receiving Chua circuit is out of synchrony with said chaotic signal generated by said transmitting Chua circuit" in addition to detecting when the transmitting Chua circuit is in synchrony. At a minimum, this element of claim 21 is not made obvious by *Corron*. The prior art cited in col. 1, lines 40-50 of *Corron*'s background discloses a wholly different method of detection:

> A second approach uses a shift-key approach, in which an information signal is encoded using *a different chaotic attractor for each symbol* to be transmitted... Upon reception, *separate receiver subsystems, one for each possible symbol*, are used to identify the bursts by detecting which of the multiple receiver subsystems has synchronized.

(Emphasis added). The prior art cited incorporates multiple chaotic subsystems with multiple chaotic attractors. The transmitted signal disclosed in *Corron* never goes out of synchrony with at least some portion of the receiver. Furthermore, *Corron* in cited col. 9, lines 53-61 specifically teaches away from the features of claim 21:

> One of the important benefits of this communications architecture is that *synchronization is maintained in the receiver* even in the presence of nonzero modulation. Specifically, the theory predicts that *the receiver does not go out of tune* as the transmitter is modulated.

(Emphasis added). Here again, *Corron* emphasizes the importance of constant synchronization and teaches away from a signal going out of synchrony. The reference does not render obvious independent claim 21, and Applicants therefore respectfully request that the claim be allowed.

CONCLUSION

Favorable reconsideration of this application is respectfully requested. The Examiner is invited to contact the undersigned should it be deemed necessary to facilitate prosecution of the application.

Respectfully submitted,

BANNER & WITCOFF, LTD.
1001 G St NW
11th Floor
Washington, DC 20001-4597
(202) 824-3000

By: 
Bradley C. Wright
Registration No. 38,061

Date: April 12, 2005